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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,581	07/09/2003	Colin Chee Chong Hin	70020720-1	1315

7590 02/08/2005  
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EXAMINER	
MOUTTET, BLAISE L	
ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/616,581	<b>Applicant(s)</b> HIN, COLIN CHEE CHONG	
	<b>Examiner</b> Blaise L Mouttet	<b>Art Unit</b> 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2005.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2,4-6,8 and 10-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,4-6,8 and 10-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 2, 8, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hess et al. US 6,719,467 in view of Hoshino et al. US 6,709,085.

Hess et al. discloses, regarding claim 2, a print mechanism comprising:

a print head assembly (figures 3a-3c) comprising a position detector (21, 22) and a marking device (52), the position detector (21, 22) comprising an imaging device (figure 9) for periodically forming an image of a portion of a print medium (105) (column 13, line 63 – column 14, line 55);

an actuator (70) for moving the print head assembly relative to the print medium in a predetermined direction (column 5, lines 4-13); and

a controller (15) for comparing first and second images formed by the imaging device at first and second times, respectively, in a time interval in which the actuator (70) has moved the print head assembly relative to the print medium and for determining a displacement of the print head assembly between the first and second times (column 14, lines 56-67), the controller (15) causing the marking device to mark the print medium at locations determined by the determined displacement while the printhead assembly is moving relative to the print medium (column 5, lines 60-67).

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Hess et al. discloses, regarding claim 8, a method for printing on a print medium comprising:

causing a print head assembly (figures 3a-3c) comprising a position detector (21, 22) and a marking device (52), the position detector (21, 22) comprising an imaging device (figure 9) for periodically forming an image of a portion of a print medium (105) (column 13, line 63 – column 14, line 55), to move across the print medium in a predetermined direction (column 5, lines 4-13);

comparing first and second images formed by the position detector (21, 22) at first and second times, respectively, in a time interval in which the actuator (70) has moved the print head assembly relative to the print medium and for determining a displacement of the print head assembly between the first and second times (column 14, lines 56-67); and

causing the marking device to mark the print medium at locations determined by the determined displacement while the printhead assembly is moving relative to the print medium (column 5, lines 60-67).

Regarding claim 11, the imaging device comprises a light source (102) for illuminating the print medium at an angle less than 45 degrees with respect to the surface of the print medium (column 14, lines 15-20).

Regarding claim 12, the marking device (52) comprises an ink dispensing mechanism for depositing ink droplets on the print medium (column 4, lines 35-63).

Hess et al. discloses that the actuator (70) moves the print head assembly relative to the print medium at a speed that depends on an input signal dependent upon

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the determined displacement by the position detector (column 5, lines 9-13, column 5, lines 60-67).

Hess et al. fails to disclose, regarding claims 2 and 8, that the input signal to the actuator is varied in response to the determined displacement so as to reduce fluctuations in speed.

Hoshino et al. discloses a self motorized inkjet printer similar to the type disclosed by Hess et al. (figures 1 and 2) in which images of the print surface are detected and an input signal to an actuator (9) moving a print head assembly is varied when the detected displacement of the printhead is outside a predetermined range so as to reduce fluctuations in the speed (column 9, lines 41-60, column 11, lines 18-30).

It would have been obvious to a person of ordinary skill in the inkjet printing art at the time of the invention to vary the input signal to the actuator of Hess et al. to reduce fluctuations of speed in response to the determined displacement as suggested by Hoshino et al.

The motivation for doing so would have been to maintain the speed of the print head assembly within a permissible range so as to avoid non-straight print lines as suggested by column 9, lines 41-60 of Hoshino et al.

2. Claims 4-6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hess et al. US 6,719,467 in view of Tullis US 6,118,132.

Hess et al. discloses, regarding claim 4, a print mechanism comprising:

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a print head assembly (figures 3a-3c) comprising a position detector (21, 22) and a marking device (52), the position detector (21, 22) comprising an imaging device (figure 9) for periodically forming an image of a portion of a print medium (105) (column 13, line 63 – column 14, line 55);

an actuator (70) for moving the print head assembly relative to the print medium in a predetermined direction (column 5, lines 4-13); and

a controller (15) for comparing first and second images formed by the imaging device at first and second times, respectively, in a time interval in which the actuator (70) has moved the print head assembly relative to the print medium and for determining a displacement of the print head assembly between the first and second times (column 14, lines 56-67), the controller (15) causing the marking device to mark the print medium at locations determined by the determined displacement while the printhead assembly is moving relative to the print medium (column 5, lines 60-67).

Hess et al. discloses, regarding claim 10, a method for printing on a print medium comprising:

causing a print head assembly (figures 3a-3c) comprising a position detector (21, 22) and a marking device (52), the position detector (21, 22) comprising an imaging device (figure 9) for periodically forming an image of a portion of a print medium (105) (column 13, line 63 – column 14, line 55), to move across the print medium in a predetermined direction (column 5, lines 4-13);

comparing first and second images formed by the position detector (21, 22) at first and second times, respectively, in a time interval in which the actuator (70) has

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moved the print head assembly relative to the print medium and for determining a displacement of the print head assembly between the first and second times (column 14, lines 56-67); and

causing the marking device to mark the print medium at locations determined by the determined displacement while the printhead assembly is moving relative to the print medium (column 5, lines 60-67).

Regarding claim 5, the imaging device comprises a light source (102) for illuminating the print medium at an angle less than 45 degrees with respect to the surface of the print medium (column 14, lines 15-20).

Regarding claim 6, the marking device (52) comprises an ink dispensing mechanism for depositing ink droplets on the print medium (column 4, lines 35-63).

Hess et al. discloses that a variety of imaging devices may be used for detecting the images (column 18, lines 21-35).

Hess et al. fails to disclose that the imaging device comprises an image sensor for generating a one-dimensional image of the print medium in a direction parallel to the predetermined direction (direction of printhead movement).

Tullis provides teachings relevant to the detection mechanisms of images on print media in inkjet printing systems (abstract, column 2, lines 5-27) and teaches that utilizing a one dimensional sensor for generating images in a direction perpendicular to media feed movement (equivalent to direction parallel to printhead movement) provides advantages of reduces computational complexity during image capture (column 9, line 57 – column 10, line 8).

It would have been obvious to a person of ordinary skill in the inkjet printing art at the time of the invention to utilize an image sensor for generating one dimensional images as suggested by Tullis in the imaging device of Hess et al.

The motivation for doing so would have been to reduce computational complexity during the image capture as suggested by column 9, line 57 – column 10, line 8 of Tullis.

### ***Response to Arguments***

3. Applicant's arguments filed January 7, 2005 have been fully considered but they are not persuasive.

The applicant has argued, regarding the rejection of claims 4 and 10 over Hess in view of Tullis, that the use of a one-dimensional sensor as taught by Tullis would make the device of Hess inoperable. The examiner disagrees and notes that the applicant has provided no evidence to support such allegation of inoperability. A review of column 9, line 57 – column 10, line 8 of Tullis would seem to contradict applicant's allegation since Tullis teaches the direct substitution of a one dimensional sensor array in place of a two-dimensional sensor array for capturing two dimensional image data. As taught by Tullis, a one-dimensional sensor array can provide equivalent operation to a two-dimensional image sensor as long as the array is relatively scanned in a direction orthogonal (or at an oblique angle) to the longitudinal arrangement of the array. Since Hess already provides a scanning sensor it is perfectly compatible with the use of a one-dimensional image sensor. As noted by Tullis such substitution results in a



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reduction in computational complexity during image capture providing ample motivation for one of ordinary skill in the art to make the combination.

The applicant has traversed the rejections of claims 2 and 8 over Hess in view of Hoshino.

The examiner notes that applicant seems to agree that Hoshino provides the missing claimed elements. In the last sentence of page 7, paragraph 4 the applicant states that "...this passage does teach that the correction reduces fluctuations in the speed of the print head." The applicant goes on to argue that the reference doesn't teach this limitation. In any case the examiner maintains that the reference does teach this limitation because it is clear from the cited passages of Hoshino that speed fluctuation reduction is integral to maintaining linear scan paths required for straight printing.

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Contact Information***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Blaise Mouttet who may be reached at telephone number (571) 272-2150. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier, Art Unit 2853, can be reached at (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Blaise Mouttet January 25, 2005

*Blaise Mouttet* 01/25/2005

  
LAMSON NGUYEN  
PRIMARY EXAMINER  
*01/25/05*